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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/651,620	08/30/2000	Eugene P. Marsh	4218US (99-0796)	1130

7590 10/24/2002  
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Salt Lake City, UT 84110

EXAMINER

VU, HUNG K

ART UNIT PAPER NUMBER

2811

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/651,620

Applicant(s)

EUGENE P. MARSH

Examiner

Hung K. Vu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 July 2002.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 21-58 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 59-66 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 17 April 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \*   c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.                      6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Invention of Embodiment I, Claims 1-8, 10-20 and 59-66, in Paper No. 10 is acknowledged.

Claims 9, 21-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper No. 10.

### *Claim Objections*

2. Claims 3, 4 and 5 objected to because of the following informalities:

In claims 3-5, line 2, delete "further" for clarity.

In claim 3 and 5, line 2, "a layer" should be changed to "said layer" for clarity.

Appropriate correction is required.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8 and 10-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 respectively, of U.S. Patent No. 6,461,909. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-8 and 10-20 are generic to claims 1-20 of U.S. Patent No. 6,461,909. The claimed invention (claims 1-8 and 10-20) of the present application is a diffusion barrier layer which is known in the semiconductor art to be capable to perform the same function as the adhesion layer of the claimed invention (claims 1-20) of the above identified U.S. Patent with similar intended scope, thus allowing unjustified or improper timewise extension of the "right to exclude" granted by a U.S. Patent No. 6,461,909.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 4, 15 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kirlin et al. (PN 6,320,213).

Kirlin et al. discloses, as shown in Figures 2 and 24, a method for forming a semiconductor device structure comprising,

providing a semiconductor substrate assembly (102,104) having a surface;

forming a diffusion barrier layer (108) over at least a portion of the surface, wherein the diffusion barrier layer comprises  $\text{RuSi}_x\text{O}_y$ . (Col. 4, line 67, Ru-Si-O).

With regard to claim 2, Kirlin et al. discloses forming the diffusion barrier layer over at least a portion of the surface comprises forming a layer of  $\text{RuSi}_x\text{O}_y$  where x is 1, which is in a range of about 0.01 to about 10.

With regard to claim 4, Kirlin et al. discloses forming the diffusion barrier layer over at least a portion of the surface comprises forming a layer of  $\text{RuSi}_x\text{O}_y$  where y is 1, which is in a range of about 0.01 to about 10.

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With regard to claim 15, Kirlin et al. discloses the method further including forming at least one additional conductive material (110) over the diffusion barrier layer and selecting the at least one additional conductive material from a group of a metal and a conductive metal oxide. (Figure 3, Col. 5, lines 21-38, Pt, Al, W, Pd)

With regard to claim 19, Kirlin et al. discloses forming the diffusion barrier layer comprises forming a diffusion barrier layer in an oxidizing atmosphere. (Col. 5, lines 1-8)

*Allowable Subject Matter*

5. Claims 59-66 are allowed.

6. The following is an examiner's statement of reasons for allowance:

Applicant's claims 59-66 are allowable over the references of record because none of references disclose or can be combined to yield the claimed invention such as the method for forming a semiconductor device structure having a  $\text{RuSi}_x\text{O}_y$  barrier layer, the method comprising, placing a semiconductor substrate assembly in a reaction chamber, the semiconductor substrate assembly having a surface; introducing a ruthenium precursor into the reaction chamber to form a single layer of ruthenium on at least a portion of the semiconductor substrate assembly surface; introducing a nonreactive gas into the reaction chamber to substantially cover the single layer of ruthenium and purge the ruthenium precursor from the reaction chamber; introducing a silicon precursor into the reaction chamber to form a single layer of  $\text{RuSi}_x\text{O}_y$  on at least a portion of the semiconductor substrate assembly surface; introducing a

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nonreactive gas into the reaction chamber to substantially cover the single layer of  $\text{RuSi}_x\text{O}_y$  and purge the silicon precursor from the reaction chamber.

*Conclusion*

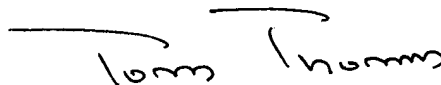
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-5:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

October 18, 2002

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800